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Proposed Engineering Research Program: Fiscal Year 1973

ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
NEW YORK STATE DEPARTMENT OF TRANSPORTATION

PROPOSED ENGINEERING RESEARCH PROGRAM: FISCAL YEAR 1973

ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
New York State Department of Transportation
State Campus, Albany, New York 12226

Submitted June 30, 1972

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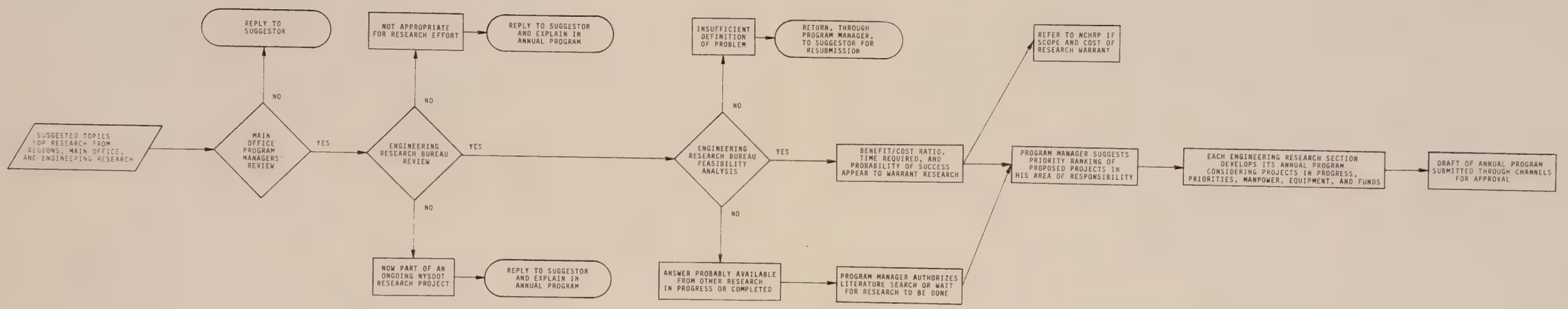
DEVELOPMENT OF THE ENGINEERING RESEARCH PROGRAM / NEW YORK STATE DEPARTMENT OF TRANSPORTATION



I. INTRODUCTION

This publication outlines the proposed engineering research program which upon approval will be conducted by the Engineering Research and Development Bureau during Fiscal Year 1973-74. Its purpose is twofold: 1) to identify both on-going research projects that will continue into next fiscal year, and all new research topics suggested by the Department's staff to date; and 2) to serve as a basis for preparing this Bureau's budget requests for Fiscal Year 1973-74.

Input for the proposed program consisted of ideas and suggestions submitted as "Research Needs Statements" (on Form PHR-73, a copy of which is appended at the end of this publication) by various Department units. To encourage widespread participation in identifying important problems warranting investigation, a "Call for Research Problems," dated January 19, 1972, was sent to all Main Office program managers and to Regional Directors. All responses were forwarded to appropriate program managers for evaluation and assignment of priorities. This review included problems recommended in previous years but deferred because of low priority or for other considerations. Thus, the proposed program reflects an updated appraisal of all outstanding problems as well as new ones. The final selection of projects necessarily considered the current level of staffing within each of this Bureau's six research sections, present workloads, and the effects of existing expenditure ceilings on the progress of current research. This process is illustrated on the foldout flow diagram that follows this page.

In all, 42 suggestions for research were reviewed, of which 32 described new problems and 10 were resubmissions from previous years. A summary by categories is given in Table 1. Each suggestion is discussed in Chapter IV and the originator is acknowledged.

TABLE 1
SUMMARY OF SUGGESTED RESEARCH SUBJECTS

Subjects Reviewed	Category
15	Formulated into new research projects
2	Integrated into existing research projects
9	Research currently in progress
3	More appropriate for other agencies
11	Research not required; handled through Technical Assistance Program as needed
2	Backlog
42	Total

II. PROGRAMS AND STAFFING

This Bureau's Mission Statement* identifies two programs that it conducts in fulfilling its role in the Department. These programs and their corresponding goals are described as follows:

1. Technical Assistance

   "To provide liaison between Department program managers and investigational resources within the Department, as well as the research community in general, for the purpose of solving engineering problems arising from all aspects of location, design, construction, operations, and maintenance of transportation facilities, and to provide, upon request, specific investigation and consulting services of limited scope and duration which draw on the Bureau's specialized talents and capabilities."

2. Experimentation

   "To apply the experimental resources of the Department to solution of those engineering problems of highest priority, within the competency of the Bureau staff and for which sufficient other resources are available, and to contract for urgently needed research in cases where sufficient resources are not readily available in the Department."

In carrying out these two programs, the engineering staff requires a variety of essential support services. Referred to for budget purposes as "Support of Programs," this covers administrative services (such as purchasing, inventorying, general office work, and program control) and engineering/technical services (such as publications and electronic data processing).

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*Mission Statement Engineering Research and Development Bureau, July 1972 (3rd Revision).

TABLE 2: FY 73
PROGRAM SUMMARY

Activity	Personal Service (Adjusted)	Percent of Staff Effort
Support of Programs	$312,000	16
Technical Assistance Program	138,000	7
Experimentation Program	1,519,000	77
Total	$1,969,000	100

Table 2 summarizes personal service allocations for these activities, assuming the full authorized staff of 129 positions. All amounts have been adjusted (annual salary plus 29 percent), where appropriate, to reflect total personal services chargeable to the Federal HPR program. If current vacancies remain frozen during FY 73, total personal service would be reduced by approximately $185,300 to $1,783,700 (adjusted), or $1,382,000 (actual annual salaries). A cost breakdown for the proposed Experimentation Program is given in Chapter III.

III. PROPOSED EXPERIMENTATION PROGRAM

This chapter lists the research projects that will be conducted during FY 73 under the Experimentation program by each of this Bureau's six engineering sections: 1) Appurtenances/Operations, 2) Geotechnics, 3) Materials, 4) Pavements, 5) Special Projects, and 6) Structures. The following points concerning format and content of the six lists following this page should be noted:

1. Continuing projects are listed in numerical order.

2. Proposed projects are listed by overall priorities established by this Bureau (as discussed in Chapter I). They are designated by a code consisting of three elements:

   a. *Agency Prefix*, identifying the Main Office unit that reviewed the research suggestion and assigned a priority rating (see Chapter IV). These agency codes are as follows:

CS	Construction Subdivision
FDS	Facilities Design Subdivision
HMS	Highway Maintenance Subdivision
MB	Materials Bureau
SDCS	Structures Design and Construction Subdivision
SMB	Soil Mechanics Bureau
TSD	Traffic and Safety Division

   b. *Index Number*, assigned sequentially to suggestions in each research area as they arrive during the fiscal year.

   c. *Fiscal Year Suffix*, representing the year the suggestion was first recommended for consideration in the proposed research program.

3. Commentaries on all suggestions, including whether they are incorporated in the proposed FY 73 program, are given in Chapter IV.

APPURTENANCES/OPERATIONS SECTION

Proposed FY 73 Experimentation Program
Engineering Research and Development Bureau

		Research* Personnel FY 73	Total* Project FY 73	Additional* (After FY 73)
PROJECTS WITH EXISTING STAFF				
Continuing				
22-1	Pavement Marking Materials	$ 20,400	$ 24,500	$ 10,000
36-2	Field Evaluation of Rail Lighting	20,800	25,700	20,000
57-1	Construction and Sealing of Transverse Joints	36,700	42,300	10,000
86-1	Intensive Highway Delineation	23,200	30,900	20,000
87-1	Stay in Place Forms for Concrete Bridge Decks	8,800	10,900	0
101-1	Performance of Safety Devices	18,000	25,200	20,000
102-1	Improvement of Safety Facility Accessories	29,800	37,500	20,000
103-1	Effects of Illuminated Signs on Traffic Performance	6,900	8,400	0
103-2	Statewide Survey of Sign Legibility	9,800	11,300	0
103-3	Maintenance Requirements for Reflective Sign Materials	19,600	23,100	20,000
105-1	Resealing Rigid Pavement Joints	25,000	25,700	10,000
112-1	Layout Procedures for Pavement Markings	14,800	18,450	0
113-1	Cost/Effectiveness of Concrete Median Barriers	10,500	14,100	0
	SUBTOTAL 1	244,300	298,050	
Proposed				
TSD-1(3)	Grooved Stripes for Wet Night Visibility	27,200	65,300	40,000
TSD-2(3)	Relationship Between Highway Characteristics and Traffic Accidents	19,200	20,700	15,000
	SUBTOTAL 2	290,700	384,050	
ADDITIONAL PROJECTS IF FULLY STAFFED**				
Unidentified		42,000	42,000	--
	GRAND TOTAL	$332,700	$426,050	

*Personal Service has been factored (annual salary plus 29%) to account for the full amount chargeable to the Federal HPR program.
**Assumes the full staff authorized as of August 26, 1971.

GEOTECHNICS SECTION

Proposed FY 73 Experimentation Program
Engineering Research and Development Bureau

		Research* Personnel FY 73	Total* Project FY 73	Additional* (After FY 73)
PROJECTS WITH EXISTING STAFF				
Continuing				
19-1	County Engineering Soil Surveys	$ 600	$ 19,000	$230,000
29-1	Durability of Metal Culverts	33,100	36,800	50,000
30-2	Performance Evaluation of Recharge Basins	48,900	59,800	125,000
64-1	Attenuation of Frost Action: Selected Problems	42,700	47,100	60,000
64-2	Surface Icing of Insulated Pavements	1,900	2,600	0
71-1	Lateral Load Capacity of Vertical Pile Groups	2,000	2,700	0
73-1	Total Automation of Consolidation Testing (TACT)	2,000	3,400	0
115-1	Basic Variables in Consolidation Testing and Design	26,700	67,900	300,000
118-1	Small Watershed Stream Gaging	2,300	51,600	475,000
	SUBTOTAL	160,200	290,900	
ADDITIONAL PROJECTS IF FULLY STAFFED**				
SMB-3(2)	Control of Embankment Compaction	19,200	29,400	150,000
	GRAND TOTAL	$179,400	$320,300	

*Personal Service has been factored (annual salary plus 29%) to account for the full amount chargeable to the Federal HPR program.
**Assumes the full staff authorized as of August 26, 1971.

MATERIALS SECTION

Proposed FY 73 Experimentation Program
Engineering Research and Development Bureau

		Research* Personnel FY 73	Total* Project FY 73	Additional* (After FY 73)
PROJECTS WITH EXISTING STAFF				
Continuing				
59-1	Protective Coatings for Concrete	$ 21,000	$ 21,700	$ 25,000
60-1	Skid Resistance of Portland Cement Concrete Pavements	26,500	27,600	0
78-1	Lightweight Aggregates in Asphalt Concrete	38,600	42,800	10,000
83-1	Storage of Asphalt Concrete	21,100	23,500	0
104-2	Slag Coarse Aggregate in Rigid Pavements	14,800	14,950	0
107-1	Pavement Wear Simulator	20,000	20,000	0
108-1	Neoprene Cylinder Caps	11,000	11,000	0
109-1	Pavement Surface Rehabilitation for Improved Skid Resistance	23,000	23,200	50,000
110-1	Protective Coatings for Metals	20,900	21,300	45,000
111-1	Bituminous Concrete Failure Mechanisms	16,400	20,600	15,000
MB-7(2)	Chemical Reactivity of Concrete Aggregates	8,000	8,000	0
	SUBTOTAL 1	219,900	234,650	
Proposed				
	Topics Concerning Bridge Deck and Asphalt Concrete Durability	21,600	21,800	0
	SUBTOTAL 2	241,500	256,450	
ADDITIONAL PROJECTS IF FULLY STAFFED**				
	Unidentified	24,000	24,000	--
	GRAND TOTAL	$265,500	$280,450	

*Personal Service has been factored (annual salary plus 29%) to account for the full amount chargeable to the Federal HPR program.
**Assumes the full staff authorized as of August 26, 1971.

PAVEMENTS SECTION

Proposed FY 73 Experimentation Program
Engineering Research and Development Bureau

		Research* Personnel FY 73	Total* Project FY 73	Additional* (After FY 73)
PROJECTS WITH EXISTING STAFF				
Continuing				
25-2	Experimental Rigid Pavements	$ 46,170	$ 53,970	$ 170,000
25-4	Construction Control of Rigid Pavement Roughness	2,600	3,900	0
26-2	Flexible Pavement Base Course Study	33,930	49,130	325,000
35-1	Bituminous Resurfacings on Rigid Pavements	18,570	23,870	35,000
65-2	Bituminous Pavement Construction: New Methods	23,850	28,175	75,000
81-1	Vibration of Pavement Concrete	45,270	49,770	35,000
84-1	Flexible Pavement Joint Construction	26,060	28,000	30,000
89-1	Pavement Patching	20,500	23,550	60,000
100-1	Cessation Requirements for Bituminous Paving	27,850	34,280	60,000
	SUBTOTAL	244,800	294,645	
Proposed				
FDS-1(3)	Pavement Deflections and Foundation Conditions	39,730	90,470	150,000
HMS-1(2)	Preventive Maintenance Overlays	15,830	20,130	80,000
CS-2(2)	Evaluation of Asphalt Compaction Procedures	12,220	13,520	100,000
	GRAND TOTAL	$312,580	$418,765	

*Personal Service has been factored (annual salary plus 29%) to account for the full amount chargeable to the Federal HPR program.

SPECIAL PROJECTS SECTION

Proposed FY 73 Experimentation Program
Engineering Research and Development Bureau

		Research* Personnel FY 73	Total* Project FY 73	Additional* (After FY 73)
PROJECTS WITH EXISTING STAFF				
Continuing				
45-1	Uniformity Studies of Portland Cement Concrete	$ 700	$ 1,000	$ 0
53-1	Asphalt Concrete Uniformity: Influence of Automation	7,100	7,700	0
62-1	Acceptance Sampling and Testing of Construction Materials	19,000	21,500	0
72-1	Development of an Optimal Skid Survey Trailer	15,000	16,500	0
74-1	Noise Pollution Study	55,100	64,200	50,000
88-1	Parameters Affecting Skid Resistance Measurement	44,100	52,900	30,000
114-1	Radio Frequency Traffic Sensors	23,700	27,000	0
	SUBTOTAL	164,700	190,800	
ADDITIONAL PROJECTS IF FULLY STAFFED**				
TSD-6(3)	Development of a Detector for Wrong-Way Traffic Movements	20,300	21,000	2,000
TSD-7(3)	Applying Micro Computer Technology to Traffic Controllers	20,000	20,500	10,000
Unidentified		17,800	17,800	--
	GRAND TOTAL	$222,800	$250,100	

*Personal Service has been factored (annual salary plus 29%) to account for the full amount chargeable to the Federal HPR program.
**Assumes the full staff authorized as of August 26, 1971.

STRUCTURES SECTION

Proposed FY 73 Experimentation Program
Engineering Research and Development Bureau

		Research* Personnel FY 73	Total* Project FY 73	Additional* (After FY 73)
PROJECTS WITH EXISTING STAFF				
Continuing				
42-1	Field Tests of Horizontally Curved Girder Bridges	$ 7,500	$ 7,700	$ 0
67-1	Predeflected Steel-Concrete Composite Girder Bridges	12,400	13,114	0
116-1	Vehicle Induced Gust Loads on Overhead Sign Structures	10,900	12,275	0
117-1	Structural Evaluation of Orthotropic Bridge	53,900	67,600	12,000
SDCS-8(2)	Durability of Concrete Bridge Decks	48,700	55,600	20,000
SDCS-2(3)	Fatigue Failure of Aluminum Luminaire Supports	17,800	20,150	0
	SUBTOTAL	151,200	176,439	
ADDITIONAL PROJECTS IF FULLY STAFFED**				
Unidentified		20,000	20,000	--
	GRAND TOTAL	$171,200	$196,439	

*Personal Service has been factored (annual salary plus 29%) to account for the full amount chargeable to the Federal HPR program.
**Assumes the full staff authorized as of August 26, 1971.

IV. REVIEW OF SUGGESTED RESEARCH TOPICS

Table 3 lists the 42 topics recommended for consideration in the FY 73 research program by ten Main Office units, four of the Department's regional offices, and the Federal Highway Administration. The letter codes at the left identify the Main Office program manager who reviewed and ranked the suggestions (Chapter III gives a more detailed explanation of the coding). The list contains topics new this year, and also resubmissions not programmed in previous years. Following Table 3, the topics are discussed in seven groups corresponding to the program managers who reviewed them. Within each group, *the order of presentation indicates the relative priority assigned by the program manager.*

TABLE 3
RESEARCH SUGGESTIONS

Suggested by Construction Subdivision (CS)	
CS-2(2)	Evaluation of Asphalt Compaction Procedures
Suggested by Design and Construction Division (DCD)	
TSD-2(3)	Relationship Between Highway Characteristics and Traffic Accidents
Suggested by Engineering Research and Development Bureau (ERDB)	
FDS-1(3)	Pavement Deflections and Foundation Conditions
Suggested by Facilities Design Subdivision (FDS)	
FDS-4(3)	Foundations for Signs
Suggested by Highway Maintenance Subdivision (HMS)	
HMS-1(2)	Pavement Preservation Methods
HMS-4(2)	Bridge Paints
HMS-5(2)	Snow and Ice Control Chemicals and the Environment
HMS-1(3)	Roadside Soils Monitoring
HMS-2(3)	Durability and Maintenance of Reflective Sheeting for Signs
HMS-4(3)	Snow Fences
Suggested by Materials Bureau (MB)	
HMS-4(2)	Structural Paints (Galvanized Products)
MB-2(2)	Performance Evaluation of Viscosity-Graded Asphalt Cements
MB-7(2)	Chemical Reactivity of Concrete Aggregates
MB-15(2)	Effectiveness of Waterproofing Membranes for Bridge Decks
MB-1(3)	Asphalt Concrete Thin Overlays
MB-2(3)	Design and Test Criteria for Concrete Pavement Joint Devices
MB-3(3)	Product Evaluation Procedures
MB-4(3)	Longitudinal Joint Construction-PCC Pavements
MB-5(3)	Hot-Weather Concrete
MB-6(3)	Type I Cement
MB-7(3)	Floating Glass Beads
MB-8(3)	Acceptance Sampling of Materials
Suggested by Policy Development Group (PDG)	
TSD-3(3)	Effects of Illuminated Signs on Traffic Performance
Suggested by Soil Mechanics Bureau (SMB)	
SMB-3(2)	Control of Embankment Compaction
SMB-4(2)	Settlement Analysis of Structures on Granular Materials
Suggested by Structure Design and Construction Subdivision (SDCS)	
SDCS-7(2)	Structural Evaluation of Orthotropic Bridge
SDCS-1(3)	Field Tests of a Horizontally Curved Box Girder Bridge
SDCS-2(3)	Fatigue Failure of Aluminum Luminaire Supports
SDCS-3(3)	Truck Induced Wind Loads on Sign Structures
Suggested by Traffic and Safety Division (TSD)	
TSD-6(3)	Development of a Detector for Wrong-Way Traffic Movements
TSD-7(3)	Applying Micro Computer Technology to Traffic Controllers
Suggested by Region 4	
FDS-14(2)	Foundations for Widened Pavements
SDCS-8(2)	Durability of Concrete Bridge Decks
SDCS-5(3)	Hydro-prest Slope Paving Slabs
Suggested by Region 5	
SDCS-4(3)	Review of Design Criteria for Bridges
Suggested by Region 9	
FDS-3(3)	Hydraulic Energy Dissipators
TSD-5(3)	Feasibility of an Audio Information System for Motorists
Suggested by Region 10	
FDS-2(3)	Neoprene Joint Seals
HMS-3(3)	Maintenance of Box Beam Median Barrier
SDCS-6(3)	Effect of Embedded Steel Pipes on Concrete Columns
TSD-4(3)	Computer Program Simulations for Traffic Operations
Suggested by Federal Highway Administration (FHWA)	
TSD-1(3)	Grooved Stripes for Wet Night Visibility

A. Topic Reviewed by the Construction Subdivision

1. CS-2(2) EVALUATION OF ASPHALT COMPACTION PROCEDURES

This study was originally proposed by the Construction Subdivision in FY 72 to answer questions regarding proper use and sequence of steel and pneumatic rollers on asphalt in New York. Because of manpower limitations, a planned study of roller procedures was deferred, but is now scheduled as a proposed project for FY 73 in the Pavement Section.

B. Topics Reviewed by the Facilities Design Subdivision

1. FDS-1(3) PAVEMENT DEFLECTIONS AND FOUNDATION CONDITIONS

Proposed by the Engineering R&D Bureau; this project will be initiated during FY 73 in the Pavement Section.

2. FDS-2(3) NEOPRENE JOINT SEALS

Proposed by Region 10; this topic has not been included in the program because ongoing Research Project 57-1 ("Construction and Sealing of Transverse Joints") covers the same subject. Another research project (105-1, "Resealing Rigid Pavement Joints"), covering procedures for maintaining older joints, will be initiated in FY 72.

3. FDS-3(3) HYDRAULIC ENERGY DISSIPATORS

A considerable amount of research on this subject has been conducted by other agencies. A Highway Research Information Service (HRIS) computer search turned up 49 references concerning energy dissipators in connection with water flow at culverts. This information is being reviewed and, as recommended by the program manager, will be forwarded to the submitter (Region 9) for reference. No research is planned at this time.

4. FDS-4(3) FOUNDATIONS FOR SIGNS

This suggestion was submitted to obtain information that could be used in a "value engineering" project now being conducted by another unit in the Department. Information from a Highway Research Information Service (HRIS) computer search, as well as from an in-house research project has been forwarded to the submitter (Facilities Design Subdivision). No research is planned at this time.

5. FDS-14(2) FOUNDATIONS FOR WIDENED PAVEMENTS

This suggestion will be undertaken in the Geotechnics Section when manpower becomes available; meanwhile, it forms part of this section's backlog.

C. Topics Reviewed by the Highway Maintenance Subdivision

1. HMS-1(2) PAVEMENT PRESERVATION METHODS

Research is currently in progress on three projects concerning pavement maintenance: 35-1 ("Bituminous Resurfacings on Rigid Pavements"), where the main emphasis is on retarding or controlling reflection cracking; 35-2 ("Bituminous Resurfacings on Flexible Pavements"), which is near completion and will offer tentative guidelines for overlaying pavements; and 89-1 ("Pavement Patching"), a new study aimed at determining optimum materials and procedures for this short-term maintenance. While these studies encompass a number of important objectives, they do not deal with preventive maintenance. Therefore, a study is being proposed to determine the feasibility of overlaying pavements before they become unserviceable in order to prolong their life. This study will be undertaken by the Pavement Section when time and manpower permit, and is listed in the Pavement Section program as "Preventive Maintenance Overlays."

2. HMS-4(2) BRIDGE PAINTS

Suggested by both the Highway Maintenance Subdivision and the Materials Bureau [as "Structural Paints (Galvanized Products")], this study is in the FY 72 program as Materials Section Project 110-1

3. HMS-5(2) SNOW AND ICE CONTROL CHEMICALS AND THE ENVIRONMENT

Proposed by the Highway Maintenance Subdivision in FY 72; a current awareness file is being maintained and information services are being provided as part of the Technical Assistance Program of the Materials Section.

4. HMS-1(3) ROADSIDE SOILS MONITORING

Recommended by the Highway Maintenance Subdivision; the Soil Mechanics Bureau is currently measuring salt contents of groundwater, surface water, and soil adjacent to highways to establish baseline data. However, determining the short- and long-term effects on the roadside environment and developing methods of neutralizing any deleterious effects are beyond our current technical capabilities.

5. HMS-2(3) DURABILITY AND MAINTENANCE OF REFLECTIVE SHEETING FOR SIGNS

Proposed by the Highway Maintenance Subdivision; this study will be initiated in FY 72 to establish the most effective procedures for the maintenance of reflective signs.

6. HMS-3(3) MAINTENANCE OF BOX-BEAM MEDIAN BARRIER

Proposed by Region 10; this study's purpose is to investigate and solve problems incurred by the maintenance forces in repairing damaged box-beam median barrier. This topic will be included as a part of our Project 102-1 ("Improvement of Safety Facility Accessories") to be initiated in FY 72.

7. HMS-4(3) SNOW FENCES

This problem is being investigated by the Structures Section under Project 80-11 ("Snow Fences").

D. Topics Reviewed by the Materials Bureau

1. MB-2(2) PERFORMANCE EVALUATION OF VISCOSITY GRADED ASPHALT CEMENTS

In FY 72 program as part of Materials Section's Technical Assistance Program.

2. MB-1(3) ASPHALT CONCRETE THIN OVERLAYS

In FY 72 program as Pavement Section Project 35-1 and Materials Section Project 109-1.

3. MB-2(3) DESIGN AND TEST CRITERIA FOR CONCRETE PAVEMENT JOINT DEVICES

Part of this problem is being studied under Pavement Section Project 25-2, and the balance initiated when the Pavement Section workload permits.

4. MB-15(2) EFFECTIVENESS OF WATERPROOFING MEMBRANES FOR BRIDGE DECKS

In FY 72 program as Materials Section Project 59-1.

5. MB-7(2) CHEMICAL REACTIVITY OF CONCRETE AGGREGATES

In FY 72 program as part of Materials Section's Technical Assistance Program.

6. MB-3(3) PRODUCT EVALUATION PROCEDURES

In FY 72 program as part of Materials Section's Technical Assistance Program.

7. MB-4(3) LONGITUDINAL JOINT CONSTRUCTION: PCC PAVEMENTS

Will be part of MB-2(3) in the Pavement Section program.

8. MB-5(3) HOT-WEATHER CONCRETE

Insufficient need to program at this time.

9. MB-6(3) TYPE I CEMENT

Insufficient need to program at this time.

10. MB-7(3) FLOATING GLASS BEADS

In FY 72 program as part of Appurtenances and Operations Project 22-1.

11. MB-8(3) ACCEPTANCE SAMPLING OF MATERIALS

In FY 72 program as Special Projects Project 62-1; any new materials acceptance sampling plans will be included as part of the Special Project Technical Assistance Program.

E. Topics Reviewed by the Soil Mechanics Bureau

1. SMB-3(2) CONTROL OF EMBANKMENT COMPACTION

This project will be undertaken by the Geotechnics Section, if it is possible to staff this section fully. Otherwise work will have to be delayed.

2. SMB-4(2) SETTLEMENT ANALYSIS OF STRUCTURES ON GRANULAR MATERIALS

This suggested project is the top-priority project within the backlog of proposed projects for the Geotechnics Section.

F. Topics Reviewed by the Structures Design and Construction Subdivision

1. SDCS-7(2) STRUCTURAL EVALUATION OF ORTHOTROPIC BRIDGE

The contract letting for the structure to be tested has been delayed and this project, originally scheduled for FY 72, will

be performed during FY 73 as Project 117-1; originally proposed by the Structures Subdivision.

2. SDCS-1(3) FIELD TESTS OF A HORIZONTALLY CURVED BOX GIRDER BRIDGE

Proposed by the Structures Subdivision, this project was initiated in FY 71 as part of continuing Research Project 42-1.

3. SDCS-8(2) DURABILITY OF CONCRETE BRIDGE DECKS

Proposed by Region 4, the need for this work has the support of the Structures Subdivision and will be initiated in FY 72.

4. SDCS-2(3) FATIGUE FAILURE OF ALUMINUM LUMINAIRE SUPPORTS

Proposed by the Structures Subdivision, this project will be initiated during FY 72.

5. SDCS-3(3) TRUCK-INDUCED WIND LOADS ON SIGN STRUCTURES

Proposed by the Structures Subdivision, this project will be initiated during FY 72 as Research Project 116-1.

6. SDCS-4(3) REVIEW OF DESIGN CRITERIA FOR BRIDGES

Proposed by Region 5; the Structures Subdivision has determined that full-scale research is not warranted on the evidence now available, and that greater benefit can be derived from directing research to specific objectives. The project has been deleted.

7. SDCS-5(3) HYDRO-PREST SLOPE-PAVING SLABS

Proposed by Region 4; the Structures Subdivision feels that this material is inappropriate with respect to weight and unit cost and recommends that this project be deleted.

8. SDCS-6(3) EFFECT OF EMBEDDED STEEL PIPES ON CONCRETE COLUMNS

Proposed by Region 10; the Structures Subdivision has determined that there is insufficient evidence of problems with embedded pipes to warrant research at this time. The project has been deleted.

G. Topics Reviewed by the Traffic and Safety Division

1. TSD-1(3) GROOVED STRIPES FOR WET NIGHT VISIBILITY

Proposed by the Federal Highway Administration as a 100-percent Federally financed administrative contract; it id anticipated that this project will be initiated in FY 73.

2. TSD-2(3) RELATIONSHIP BETWEEN HIGHWAY CHARACTERISTICS AND TRAFFIC ACCIDENTS

Proposed by the Chief Engineer; this project will consist primarily of a literature search to identify the research topic areas having the greatest benefit/cost ratio in terms of accident cost reduction. Initiation is planned for FY 73.

3. TSD-3(3) EFFECTS OF ILLUMINATED SIGNS ON TRAFFIC PERFORMANCE

Proposed by the Policy Development Group; this study will be initiated in FY 72 and will consist of observing the performance of traffic before and after installing separate sign illumination.

4. TSD-6(3) DEVELOPMENT OF A DETECTOR FOR WRONG-WAY TRAFFIC MOVEMENTS

Proposed by the Traffic and Safety Division; this project's purpose is to develop a low-cost method of finding the magnitude of the wrong-way driving problem on expressways. Once this is known, benefit/cost analysis can be performed on alternate approaches to solutions for the problem.

5. TSD-7(3) APPLYING MICRO-COMPUTER TECHNOLOGY TO TRAFFIC CONTROLLERS

This project, suggested by the Traffic and Safety Division, is proposed to evaluate new, low-cost micro-computers to determine if they are suitable for use in traffic controllers.

6. TSD-4(3) COMPUTER PROGRAM SIMULATIONS FOR TRAFFIC OPERATIONS

Proposed by Region 10; this project will not be undertaken due to a lack of appropriate manpower. Additionally, there is an ongoing NCHRP research project which is being monitored by our Traffic and Safety Division and covers some of the work proposed by the region.

7. TSD-5(3) FEASIBILITY OF AN AUDIO INFORMATION SYSTEM FOR MOTORISTS

Proposed by Region 9; this project cannot be undertaken due to the lack of appropriate manpower within the Department.

RESEARCH NEEDS STATEMENT

The information you supply on this form is your principal means of suggesting researchable subjects for the work program of the Engineering Research and Development Bureau. Subjects are selected for formal research on the basis of estimated benefits, urgency of solution, estimated costs, probability of successful completion, probability of implementation, staff capability, available facilities, current staff commitments, and general program balance.

The information that you supply will provide a basis for review by the research staff and future consultation with your engineers. Thus, it is essential that your statements be as detailed and factual as possible. Please send your completed Research Needs Statement to The Director, Engineering Research and Development Bureau, Main Office, New York State Department of Transportation.

1. SHORT TITLE (try to limit proposed project title to 50 characters or spaces):

_____

2. SUBMITTED BY:

_____

_____

DOT AGENCY:

_____

DATE: _____

PHR 73 (3/71)

3. PROBLEM DEFINITION (concisely describe the background of the problem or subject to be researched):

4. SPECIFIC RESEARCH OBJECTIVES (list specific technical objectives to be accomplished before the study can be considered completed):

a.

b.

c.

d.

e.

5. BENEFITS (state as accurately, specifically, and quantitatively as possible how the study may increase usefulness or efficiency, decrease costs, enhance safety or beauty, or provide other benefits when anticipated results are implemented):

_____

_____

_____

_____

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_____

6. IMPLEMENTATION:

a. What DOT agency will be responsible for implementing results?

_____

b. In what specific form will results be implemented? (specifications, design practice, construction practice, etc.)

_____

_____

c. What is your estimate (state approximate percent) of the probability of implementing the anticipated results?

_____

d. What problems do you anticipate in implementing results?

_____

_____

e. By what date must the project be completed in order for anticipated results to be useful?

_____

7. RESOURCES (include whatever published or unpublished reports, memoranda or other data you know of that may be useful in solving the problem, and what personnel, equipment, or facilities could you provide if required in the course of the study):

8. Who in your organization should be contacted to discuss questions that may arise regarding the content of this Research Needs Statement? At what phone number?

9. OTHER REMARKS:

RESEARCH FEASIBILITY ANALYSIS
New York State Department of Transportation
Engineering Research and Development Bureau

IDENTIFICATION

1. TITLE OF PROPOSED RESEARCH: _____

_____

2. SUBMITTED BY: _____

_____

DOT AGENCY: _____

_____

DATE: _____

ANALYSIS

3. INFORMATION SURVEY (summarize available information on current and completed research, giving references and indicating whether the objectives will or have partially/completely satisfied the proposed research).

_____

_____

_____

_____

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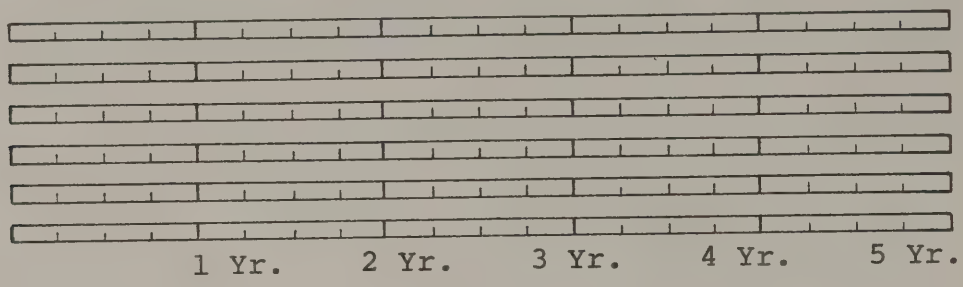
_____

4. TIME TO COMPLETION: _____YRS. (net time required to complete the research to the point of implementation, based on estimated time for activities you identify below).



5. REQUIRED RESOURCES

	GRADES						
a) Existing Staff	5	8	11	15	19	23	27
Man-years							
Salaries							
Cost							

b) Special Skills _____

_____

_____

c) Equipment
Existing _____

_____

New (type and cost) _____

_____

_____

d) Other _____

6. TOTAL EXPENDITURES

a) Research
Personal Service _____

M&O _____

b) Implementation of results (additional annual cost of modified or new design, procedure, construction practice, etc. which would result from implementation of results).

_____

_____

7. BENEFITS (list anticipated annual benefits, expressing either in dollars or in general terms such as number of lives saved, reduced pollution, etc.) _____

_____

_____

_____

_____

ACTION

8. RECOMMENDATION [indicate whether the study should be (a) considered for the research program intact or modified (b) deferred because of the availability of information from on-going or completed research (c) submitted for consideration in NCHRP or (d) other].

_____

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Prepared by: _____

Date: _____

Reviewed by: _____

Date: _____

Reviewer's Comments _____

_____

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_____

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LRI